

(19) World Intellectual Property  
Organization  
International Bureau



(43) International Publication Date  
6 October 2005 (06.10.2005)

PCT

(10) International Publication Number  
**WO 2005/091970 A2**

(51) International Patent Classification: Not classified

(21) International Application Number:  
PCT/US2005/007308

(22) International Filing Date: 7 March 2005 (07.03.2005)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:  
60/550,591 6 March 2004 (06.03.2004) US

(71) Applicant and

(72) Inventor: **TRAINER, Michael** [US/US]; 7365 Patrick  
Circle, Coopersburg, PA 18036 (US).

(81) Designated States (*unless otherwise indicated, for every  
kind of national protection available*): AE, AG, AL, AM,  
AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN,  
CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI,  
GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE,  
KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD,  
MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG,

PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ,  
TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA,  
ZM, ZW.

(84) Designated States (*unless otherwise indicated, for every  
kind of regional protection available*): ARIPO (BW, GH,  
GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM,  
ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),  
European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI,  
FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO,  
SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN,  
GQ, GW, ML, MR, NE, SN, TD, TG).

**Declarations under Rule 4.17:**

- *as to the identity of the inventor (Rule 4.17(i)) for all des-  
ignations*
- *of inventorship (Rule 4.17(iv)) for US only*

**Published:**

- *without international search report and to be republished  
upon receipt of that report*

*For two-letter codes and other abbreviations, refer to the "Guid-  
ance Notes on Codes and Abbreviations" appearing at the begin-  
ning of each regular issue of the PCT Gazette.*

(54) Title: METHODS AND APPARATUS FOR DETERMINING THE SIZE AND SHAPE OF PARTICLES

(57) **Abstract:** An instrument for measuring the size distribution of a particle sample by counting and classifying particles into selected size ranges. The particle concentration is reduced to the level where the probability of measuring scattering from multiple particles at one time is reduced to an acceptable level. A light beam is focused or collimated through a sample cell, through which the particles flow. As each particle passes through the beam, it scatters, absorbs, and transmits different amounts of the light, depending upon the particle size. So both the decrease in the beam intensity, due to light removal by the particle, and increase of light, scattered by the particle, may be used to determine the particle size, to classify the particle and count it in a certain size range. If all of the particles pass through a single beam, then many small particles must be counted for each large one because typical distributions are uniform on a particle volume basis, and the number distribution is related to the volume distribution by the particle diameter cubed.



WO 2005/091970 A2